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Pesticide Fact Sheet Number 189
Propazine

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16. Abstract (Limit: 200 words)

This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the the following actions has occurred:

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

17. Document Analysis a. Descriptors

Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, science findings.

b. Identifiers/Open-Ended Terms

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EPA

Pesticide Fact Sheet

Name of Chemical: Propazine
Reason for Issuance: Registration Standard
Date Issued: December 20, 1988
Fact Sheet Number: 189

1. DESCRIPTION OF CHEMICAL

Generic Name: 2-chloro-4,6-bis(isopropylamino)-s-triazine
Common Name : Propazine
Trade Name : Milogard,® Gesamil,® Milo-Pro, Pramitol, Prozinex
OPP Chemical Code: 080808
Chemical Abstracts Service (CAS) Number: 139-40-2
Year of Initial Registration: 1974
Pesticide Type: Herbicide
Chemical Family: S-Triazine
U.S. and Foreign Producers: Ciba-Geigy, Drexel, Makhteshim-Agan, Griffin Corp., I.Pi.Ci.

2. USE PATTERNS AND FORMULATIONS

Application Sites: Propazine is registered for use on the terrestrial food crop sorghum and for noncrop areas.

Percent of Pesticide Applied: 99+% of propazine is used on sorghum.

Types and Methods of Application: Propazine is used as a selective preemergent herbicide to control broadleaf and grass weeds. Propazine is applied as a spray, at the time of planting, prior to planting or immediately following planting by ground or aerial equipment.

Application Rates: Propazine is applied generally from 1 to 2 pounds active ingredient per acre; however, as much as 3.2 pounds active ingredient per acre may be used on certain fine textured or highly organic soils for sorghum and from 1.6 to 13.3 pounds per acre for non-crop areas.

Types of Formulations: Wettable powders (90 to 26.67% active ingredient); flowable concentrates (44.5 to 18.7% active ingredient); soluble concentrates (43% active ingredient)

Usual Carrier: Water. Agitation in the spray tank is necessary to keep the chemical in suspension.

3. SCIENCE FINDINGS

Summary Science Statement: Propazine has low acute oral toxicity and is classified in Toxicity Category III*. Propazine is not considered to be teratogenic in rats. Propazine did not induce tumors in mice but an increased incidence of mammary gland tumors was observed in female rats. Based on the rat study, the Agency has classified propazine at a Group C oncogen (potential human carcinogen) but has concluded that quantitative risk assessment is not warranted because tumors in the rat study occurred in only one sex, were mostly benign and were significantly increased only at the highest dose tested.

Propazine can be characterized as slightly toxic to cold-water fish and practically nontoxic to waterfowl. It will not pose a hazard to endangered plant or wildlife species. Propazine does have the potential to contaminate groundwater.

Chemical Characteristics:

Physical State: Solid
Color: Colorless, white
Odor: Odorless
Melting Point: 212-214 °C
Density: 1.16 $\pm$ 0.002 g/cm^3 at 20 °C
Solubility: 8.6 ppm; water 20-22 °C
Vapor Pressure: 2.9 x 10^{-8} mmHg at 20 °C
Stability: Minimum of 3 years at room temperature

Toxicology Characteristics:

Acute Toxicity:

Acute Oral--Rat: > 5 g/kg (Toxicity Category IV)

Acute Dermal--Rabbit: > 2 g/kg (Toxicity Category III)

Acute Inhalation--Rat: > 2.1 mg/L/4 hr (Toxicity Category III)

Primary Eye Irritation--Rabbit: No corneal opacity at 24 hours (Toxicity Category III)

Primary Skin Irritation--Rabbit: Score of 3.9/8.0 with erythema, eschar, and edema with improvement within 72 hours (Toxicity Category III)

Subchronic Toxicological Results: No acceptable studies are available. However, because an acceptable chronic rat study is available and a nonrodent chronic study is required, subchronic studies are not required.

* Refer to 40 CFR 156.10 for a discussion of the toxicity categories.

Chronic Feeding Results: In a chronic feeding study in rats, the NOEL was 100 ppm. A chronic feeding study in nonrodents is required.

Oncogenic Testing Results: Propazine was not oncogenic in a mouse study. In a rat study, however, it did produce an increased incidence of mammory gland tumors in female rats at the highest dosage level tested (1,000 ppm).

Developmental and Reproductive Study Results: Propazine did not induce terata in a rat developmental toxicity study. The reproductive NOEL was 100 ppm. An additional developmental study in a second species is required.

Major Route of Exposure: Dermal (mixers, loaders and applicators)

Physiological Characteristics:

Absorption Characteristics: Propazine is absorbed through plant roots.

Translocation: Propazine is absorbed by plant roots and is translocated upwardly in the plant to the leaves. It accumulates in the growing parts and leaves of plants.

Mechanism of Action: Inhibition of cell division and photosynthesis

Environmental Characteristics: Propazine is persistent, moderately mobile and stable to hydrolysis, photolysis and microbial degradation, demonstrating a potential to contaminate groundwater. It has been detected in groundwater samples in 8 states with maximum concentrations of 20 ppb in surface water and 300 ppb in groundwater. Available data are insufficient to fully assess the environmental fate and transport of propazine.

Ecological Characteristics: Propazine is slightly toxic to coldwater fish with a toxicity value (LC_{50}) of 16.5 ppm for rainbow trout. It is practically nontoxic to waterfowl with a toxicity value (LC_{50}) of 32000 ppm for Mallards. Based on use, estimated concentrations and the available toxicity data, there is no threat to endangered wildlife or plant species.

Tolerance Assessment: Tolerances are established for negligible residues of propazine in or on sweet sorghum, its grain, fodder and forage at 0.25 ppm (40 CFR 180.243). The provisional acceptable daily intake (PADI) for propazine is 0.02 mg/kg/day, based on a 2-year rat feeding study in which the systemic NOEL was set at 100 ppm

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(5 mg/kg). The safety factor used was 300 based on an uncertainty factor of 100 to account for inter- and intra-species differences with an additional factor of 3 to account for the incompleteness of the chronic data base. The theoretical maximum residue contribution (TMRC) for the U.S. population average is 0.0003 mg/kg/day, equivalent to 1.7 percent of the PADI.

4. SUMMARY OF REGULATORY POSITION AND RATIONALE. As the result of a Data Call-In Notice, issued in April 1988, for a groundwater monitoring study, all propazine registrations have been either cancelled or suspended. Therefore, the Agency has determined, at this time, that it is not necessary to formulate specific regulatory positions regarding propazine. If a registrant commits to generate the required data and complies with the requirements of FIFRA, the Agency will then address specific regulatory positions for this chemical.

5. SUMMARY OF MAJOR DATA GAPS

Product Chemistry
Toxicology
- Dermal Sensitization
- 21-Day Dermal
- Chronic Toxicity (Nonrodent)
- Teratogenicity (Rabbit)
- General Metabolism

Residue Chemistry
Environmental Fate
Ecological Effects

6. EPA CONTACT

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